Phonon-Assisted Stimulated Emission in 2H Type PbI_2(Physics)

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tens of mK. An advantage of Matsushita resistors as thermometers in the low-temperature region is that they are available in 1/8W size, and we can choose their nominal resistances from 10 Ω to several hundreds of ohms in steps of a few ohms. The magnetoresistance of Matsushita resistors having nominal resistances of 30 to 510Ω has been measured in fields up to about 80 kG at temperatures between $\sim$4.2 and $\sim$1.5 K. It is shown that the percentage change in resistance due to the application of magnetic field as a function of temperature and field can be described approximately by the equation $100\ \Delta R/R=(C_1H^2+C_2H)/(1+C_3H^2)T^{1.5}$, where R is the resistance in zero field, ΔR the change in resistance when a field H is applied, and T the temperature. C_{1-3} are adjustable temperature-dependent parameters determined from the experimental data.

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Solid State Commun., **17** (1975), 765.

The stimulated emission in 2H type PbI_2 crystals has been observed under N_2 laser beam excitation at 4.2 K. The analysis of its gain spectrum shows that the emission is induced by the recombination of free exciton assisted by the emission of one longitudinal optical phonon. At a higher level of excitation, the gain spectrum peak shifts to lower energy side. Possible mechanisms of this spectral change are discussed.

Magnetization of α-Phase Fe-Mn Alloys

Hiroshi YAMAUCHI, Hiroshi WATANABE, Yûichi SUZUKI and Hideo SAITO

J. Phys. Soc. Japan, **36** (1974), 971.

Magnetization measurements of α-phase Fe-Mn alloys, in which manganese concentration is extended up to 11 at% by cold-working techniques, have been made from liquid He temperature to room temperature. The magnetic moment decreases linearly with increasing manganese concentration and assuming that the magnetic moment of iron atom is constant at 2.217 μ_B, one obtains the magnetic moment of manganese atom to be 0.8 μ_B.

On the basis of the spin wave theory, the exchange integral J and the exchange stiffness constant D are estimated from precision measurements of magnetization at low temperatures.